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NOTE

Dibenzyltellurium(IV) Diiodide Complexes with N_4 Donor Aromatic Schiff Base Ligands

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Four complexes of Te(IV) of the type $[R_2TeSB]_2$ (where $R = C_6H_5CH_2$, SB = tetradentate Schiff base ligands) have been synthesised and characterised on the basis of elemental analysis, molar conductance, IR and X-ray photoelectron data.

Although $(C_6H_5CH_2)_2TeI_2$ is well known[1], its reaction with tetradentate N_4 donor aromatic Schiff base ligands has not been studied so far. This present paper deals with the reaction of $(C_6H_5CH_2)_2TeI_2$ and four N_4 donor aromatic Schiff base ligands, *i.e.*, SB_1 = bis(glyoxal) phenylenediamine, SB_2 = bis(2,3-butanedione) phenylenediamine; SB_3 = bis(acetylacetone) phenylenediamine and SB_4 = bis-(1-phenylbutane-1,3-dione) phenylenediamine.

The $(C_6H_5CH_2)_2TeI_2$ was prepared, purified and characterised according to literature procedure[1]. The carbonyl compound, *i.e.*, glyoxal, 2,3-butanedione, acetylacetone or phenylbutane-1,3-dione (2 mmol) and phenylenediamine (2 mmol) were mixed in dry chloroform and refluxed for 3 h. TLC suggested complete conversion of starting materials to the Schiff base. The $(C_6H_5CH_2)_2TeI_2$ (1 mmol) was then added and the mixture was refluxed for 3 h under dry nitrogen. The resulting solution was rotary evaporated and the solid complex was washed with ether and dried over vacuum. Conductance measurements were done in CH_3OH at room temperature using a Digisun Electronic Conductivity Bridge. Infrared spectra were recorded in CsI on a Perkin-Elmer 457 spectrometer. The X-ray photoelectron spectra were recorded on a VG Scientific ESCA-3 MK II electron spectrometer. The MgK_α X-ray line (1253.6 eV) was used for photoexcitation. The $Cu2p_{3/2}$ (BE = 932.8 ± 0.1 eV) and $Au4F_{7/2}$ (BE = 83.8 ± 0.1 eV) lines were used to calibrate the instrument and $Ag3d_{5/2}$ (BE = 368.2 eV) was used for cross checking[2].

All the complexes were air-stable. Elemental analyses were within ± 0.5% for C, H and N. The observed molar conductances of all the complexes in CH_3OH were 202–210 $ohm^{-1}\ cm^2\ mol^{-1}$ indicating that all these prepared complexes are 1 : 2 electrolyte[3]. All the complexes exhibit the $\nu(C{=}N)$ absorption band around

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1620–1610 cm^{-1}, which normally appears at 1640 cm^{-1} to 1650 cm^{-1} in the free ligands.[4, 5] The lowering of this band in the complexes indicates the coordination of nitrogen atoms of azomethine groups to the tellurium. The IR spectra exhibited bands at 560–540 cm^{-1} and 420–410 cm^{-1} for ν(Te—C)[1] and ν(Te—N)[1] respectively. The binding energy data of $Te3d_{3/2}$ and $Te3d_{5/2}$ photoelectron peaks for $(C_6H_5CH_2)TeI_2$ were observed at 584.0 eV and 573.8 eV respectively, higher than observed in these prepared metal complexes ($Te3d_{3/2} = 582.8$ eV and $Te3d_{5/2} = 572.4$ eV).

On the basis of the above physico-chemical studies, the following tentative structure may be proposed (Fig. 1).

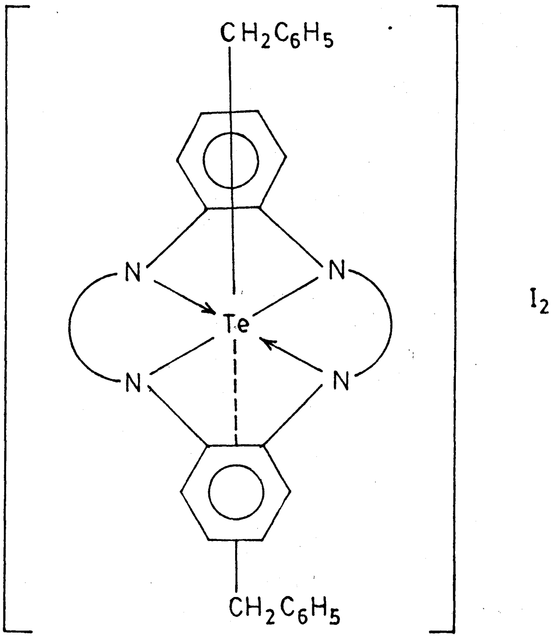

Fig. 1. Structure of $[R_2TeSB]I_2$

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